



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ :

G09G 3/36

A1

(11) International Publication Number:

WO 00/52671

(43) International Publication Date:

8 September 2000 (08.09.00)

(21) International Application Number: PCT/GB00/00723

(22) International Filing Date: 2 March 2000 (02.03.00)

(30) Priority Data:

9904704.5

3 March 1999 (03.03.99)

GB

(71) Applicant (for all designated States except US): THE SECRETARY OF STATE FOR DEFENCE [GB/GB]; Defence Evaluation Research Agency, Ively Road, A4 Building, Farnborough, Hampshire GU14 0LX (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HUGHES, Jonathan, Rennie [GB/GB]; DERA Malvern, St. Andrews Road, Malvern WR14 3PS (GB). JONES, John, Clifford [GB/GB]; DERA Malvern, St. Andrews Road, Malvern WR13 3PS (GB). BRYAN-BROWN, Guy, Peter [GB/GB]; DERA Malvern, St. Andrews Road, Malvern WR13 3PS (GB). GRAHAM, Alistair [GB/GB]; DERA Malvern, St. Andrews Road, Malvern WR13 3PS (GB).

(74) Agent: BOWDERY, A., O.; D/IPD, DERA Formalities, A4 Building, Ively Road, Farnborough, Hampshire GU14 0LX (GB).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: ADDRESSING BISTABLE NEMATIC LIQUID CRYSTAL DEVICES

(57) Abstract

A bistable nematic liquid crystal device is addressed by application of a row waveform to successive row electrodes of an x, y matrix of pixels whilst one of two data waveforms are applied to each column electrode. The row waveform has a period of two or more time slots (t_s), with two dc pulses of opposite amplitude for causing a switching to a dark state, and two dc pulses of opposite amplitude for causing a switching to a light state. The data waveforms have the same period as the strobe with dc pulses of opposite amplitude and combine with the strobe pulses to switch the device. The device can be addressed in two field periods, one field switching to a dark state, the other field switching to a light state. Alternatively, the device can be blanked to the dark state then selectively switched to the light state. When blanking is used, the row waveform has blanking dc pulses placed a short time before selective switching to reduce overall addressing time. Zero voltage pulses may be used within the two or more time slot period of the strobe and data waveforms; these reduce rms. voltages appearing at the pixels and enhance contrast ratio.

